

17639

21718

3 Hours / 100 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.
 - (8) Use of steam tables, logarithmic, Mollier's chart is permitted.

Marks

1. (A) Attempt any THREE :

12

- (a) Define following terms :
 - (i) Lumen
 - (ii) Luminous intensity
 - (iii) Candle power
 - (iv) Plane angle
- (b) Compare incandescent lamp with fluorescent lamp with reference to life, starling line, luminous efficiency, C.R.I.
- (c) State the meaning of Polar curve. Also give its applications for designing lamps.
- (d) List the different methods of lighting control.

(B) Attempt any ONE :**06**

- (a) Explain with neat sketch construction and working of fluorescent lamp.
- (b) Define the following terms of illumination :
 - (i) Space height ratio
 - (ii) Depreciation factor
 - (iii) Reflection factor

2. Attempt any TWO :**16**

- (a) Draw and explain single lamp control by two point, three point and four point method.
- (b) A hall 30 metres by 15 metres with a ceiling height of 5 metres is to be provided a general illumination of 120 lumen/m² taking a coefficient of utilisation of 0.5 and depreciation factor of 1.4 determine the number of fluorescent tubes required, their spacing mounting height and total wattage. Take luminous efficiency of fluorescent tube as 40 lumens per watt and for 80 watt tubes.
- (c) The front of building 50 m × 16 m is illuminated by 16 Nos. of 1000 watt lamps arranged so that uniform 08 illuminations on the surface is obtained. Assume :
 - (i) Luminous efficiency = 17.4 lumen/watt
 - (ii) Utilization factor = 0.4
 - (iii) Depreciation factor = 1.3
 - (iv) Waste light factor = 1.2

Determine the illumination on the surface.

3. Attempt any FOUR :**16**

- (a) State any four important terms in road lighting.
- (b) State illumination in lux for following location : Living room, Bed room, Kitchen, Hall ways.
- (c) Determine the MSCP of lamp emitting 1000 lumens. A surface inclined at an angle of 60° to the rays is kept 5 metres away from a 100 Cp lamp. Find the average of illumination on the surface.
- (d) State any four advantages of LED lamp.
- (e) Explain separation of Auto transformer dimmer with the help of diagram.

4. (A) Attempt any THREE :**12**

- (a) State any four benefits of good industrial lighting.
- (b) State the recommended illumination level of any four locations in a restaurant.
- (c) Explain the lighting schemes provided in stage lighting.
- (d) What type of luminaries are required for in hospital ?

(B) Attempt any ONE :**06**

- (a) Explain with neat diagram construction and working of Compact Fluorescent Lamp. (CFL).
- (b) State advantages & disadvantages of metal Halide lamp.

P.T.O.

5. Attempt any TWO :**16**

- (a) What are the design considerations while designing illumination scheme for an industrial unit.
- (b) State the functions of luminaries used in flood lighting.
- (c) Explain lighting schemes for Hospital.

6. Attempt any FOUR :**16**

- (a) Explain any four important terms in road lighting.
 - (b) Two lamp posts are 10 metres apart and fitted with 100 Cp per lamp each at the height of 5 metres above ground. Calculate illumination (i) under each lamp, (ii) midway between the lamps.
 - (c) Which are three different methods of lighting calculation methods ? Explain any one.
 - (d) State the importance of light house in the shipyards and state different types of lights provided by light house.
 - (e) Explain the different lighting schemes used for agricultural and horticultural applications.
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